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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,093	08/21/2001	Sjoerd Stallinga	PHN 17,843	9205

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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT PAPER NUMBER

2652

9

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,093

Applicant(s)

STALLINGA ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-13 is/are allowed.
- 6) ☐ Claim(s) 1-3, 5-7, 14, 15 and 17 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action, dated May 27, 2004, is in response to Applicant's most recent amendment, filed April 15, 2001, and Applicant's arguments, filed March 31, 2004. Claims 1-3 and 5-17 are pending. Claim 4 has been cancelled.

Claim Rejections - 35 USC § 102

1. Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Wada et al (hereafter Wada) (US 6,480,454).

In regard to claim 1, Wada discloses an optical wavefront modifier for modifying a wavefront of an optical beam passing through the modifier, the modifier comprising a first (Figs. 1-3, element 13) and a second transparent electrode layer (Figs. 1-2, element 14) and a medium for modifying the wavefront in dependence on electrical excitation of the medium and arranged between the electrode layers (Fig. 2, element 17), the first electrode layer comprising three or more electrodes of a transparent, conductive material (Fig. 3, elements A-E), characterized in that the first electrode layer comprises a series arrangement of resistors (Figs. 3 and 4, elements r1-r4), the electrodes being electrically connected to the series arrangement of resistors (Fig. 3), and the resistors being made of said transparent, conductive material (Col. 9, lines 62-67) wherein the series arrangement of resistors is integrated in the electrodes (Fig. 3).

In regard to claim 2, Wada discloses that the electrode layer comprises three terminals, which are electrically connected to the series arrangement of resistors (Fig. 3, elements A-C).

In regard to claims 5 and 6, Wada discloses a device for scanning an optical record carrier (Fig. 18, element 189) having an information layer, comprising a radiation source (Fig. 18, element 181) for generating a radiation beam, an objective system (Fig. 18, element 185) for converging the

radiation beam through the transparent layer to a focus on the information layer, and a detection system (Fig. 18, elements 187 and 188) for intercepting radiation from the record carrier, characterized in that an optical wavefront modifier according to claims 1 and 2 is arranged in the optical path between a radiation source and the detection system (Fig. 18, element 184).

2. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Ohsato (EP 0 745 980 A1).

Ohsato discloses a method for modifying a radiation beam in a scanning device for an optical record carrier, the method comprising: using a wavefront modifier (Figs. 8 and 10, element 120) comprising at least first (Fig. 10, elements 120B1-120B3) and second (Fig. 10, element 120B) transparent electrode layers, at least one of the layers having a center of symmetry that is displaced from a center of symmetry of the modifier as a whole; a medium (Fig. 10, element 120A) for modifying the wavefront in dependence on electrical excitation from the electrodes; adjusting voltage of one or both electrodes to alter an effect of the wave front modifier to compensate for expected motion of an objective lens system of the scanning device (Page 6, lines 43-45); and receiving and modifying a radiation beam using the modifier with the altered effect (Fig. 8). The center of symmetry of the modifier as a whole is interpreted to be in the optical center of the radiation beam (Fig. 8, element LA1) and in the middle of the medium (Fig. 10, element 120A) in the direction of the optical axis. The centers of symmetry of the electrode layers are also in the optical center of the radiation beam, but in a location in the optical axis that is in the plane of the respective electrode layer. Therefore, the centers of symmetry of the electrode layers are displaced in the direction of the optical axis from the center of symmetry of the modifier as a whole. The examiner notes that the optical disc (Fig. 8, element 102) tilts and causes coma

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aberration and that the expected motion of the objective system is in relation to the tilting optical disc.

3. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Hashimoto (US 6,625,102).

Hashimoto discloses an optical wavefront modifier (Fig. 16, element 504) for modifying a wavefront of an optical beam passing through the modifier, the modifier comprising at least first and second transparent electrode layers (Fig. 16, element 1610 and Col. 16, lines 60-61), at least the first electrode layer comprising three or more electrodes (Fig. 17, element 1702) of a transparent, conductive material (Col. 4, lines 55-57), wherein the electrodes within each layer are arranged around a center of symmetry and a width of the electrodes decreases with increasing radius from the center (Figs. 16 and 17); and at least one medium (Fig. 16, element 504) for modifying the wavefront in dependence on electrical excitation of the medium, the medium being arranged between the electrode layers.

4. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Komma et al (hereafter Komma) (US 5,495,461).

Komma discloses an optical wavefront modifier (Figs. 1 and 2, element 170) for modifying a wavefront of an optical beam passing through the modifier, the modifier comprising at least first and second transparent electrode layers (Fig. 2, element 16 and Col. 8, lines 56-57), at least the first electrode layer comprising three or more electrodes (Figs. 2 and 3(c), element 16) of a transparent, conductive material, wherein a difference between a maximum value taken by the aberration function in the area occupied by an electrode and a minimum value taken by the aberration function in the area occupied by that electrode is substantially equal for all electrodes of the wavefront modifier (Fig. 4); and at least one medium (Fig. 2, element 17) for modifying the

wavefront in dependence on electrical excitation of the medium, the medium being arranged between the electrode layers. It is noted that a voltage is applied to all of the electrodes (Fig. 2(b)) and each of the electrodes will produce the aberration to the wavefront according to the relation or function shown in Fig. 4.

Claim Rejections - 35 USC § 103

5. Claims 1, 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsato in view of Wada.

In regard to claim 1, Ohsato discloses an optical wavefront modifier for modifying a wavefront of an optical beam passing through the modifier (Figs. 8 and 10, element 120), the modifier comprising a first (Fig. 10, elements 120B1-120B3) and a second (Fig. 10, element 120B) transparent electrode layer and a medium for modifying the wavefront in dependence on electrical excitation of the medium and arranged between the electrode layers (Fig. 10, element 120A), the first electrode layer comprising three or more electrodes of a transparent, conductive material (Fig. 10, elements 120B1-120B3). Ohsato does not disclose that the first electrode layer comprises a series arrangement of resistors, the electrodes being electrically connected to the series arrangement of resistors and the resistors being made of said transparent, conductive material wherein the series arrangement of resistors is integrated in the electrodes. It is noted that the correcting voltage generating circuit (Fig. 8, element 134) is required to provide three voltages to the electrodes of the optical wavefront modifier.

Wada disclose a first electrode layer comprising a series arrangement of resistors, wherein the electrodes are electrically connected to the series arrangement of resistors (Figs. 3 and 4), the resistors are of said transparent, conductive material (Col. 9, lines 62-67), and the series

arrangement of resistors is integrated in the electrodes (Fig. 3). Wada shows, in Figs. 3 and 4, that by arranging the resistors in series, only two voltages have to be applied to provide two or more electrodes with different voltages.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the first electrode layer of Ohsato to comprise a series arrangement of resistors, the electrodes being electrically connected to the series arrangement of resistors and the resistors being made of said transparent, conductive material wherein the series arrangement of resistors is integrated in the electrodes as suggested by Wada, the motivation being to simplify the correcting voltage generating circuit of Ohsato (Fig. 8, element 134) by only requiring it to provide two voltages to the electrodes of the optical wavefront modifier instead of three.

In regard to claim 3, Ohsato discloses that the electrodes have a configuration for imparting a wavefront modification in Seidel form (Fig. 10).

In regard to claims 5 and 7, Ohsato discloses a device for scanning an optical record carrier (Fig. 8, element 102) having an information layer (Fig. 8, element 106), comprising a radiation source (Fig. 8, element 110) for generating a radiation beam, an objective system (Fig. 8, element 114) for converging the radiation beam through the transparent layer to a focus on the information layer, and a detection system (Fig. 8, elements 24, 26, and 118) for intercepting radiation from the record carrier, characterized in that an optical wavefront modifier (Fig. 8, element 120) according to claims 1 and 3 is arranged in the optical path between a radiation source and the detection system.

Allowable Subject Matter

6. Claims 8-13 are allowable over the prior art of record.

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In regard to claim 8, none of the references of record alone or in combination disclose or suggest a wavefront modifier arranged to receive and modify an incident radiation beam, the modifier comprising: at least a first and a second transparent electrode layer, at least the first electrode layer comprising three or more electrodes of a transparent, conductive material, **the electrodes defining a first center of symmetry, the first layer being positioned so that the first center of symmetry is displaced from an optical center of the radiation beam in a first displacement direction**; and at least one medium for modifying the wavefront in dependence on electrical excitation of the medium and arranged between the electrode layers.

7. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the references of record alone or in combination disclose or suggest an optical wavefront modifier for modifying a wavefront of an optical beam passing through the modifier, the modifier comprising at least first and second transparent electrode layers, at least the first electrode layer comprising three or more electrodes of a transparent, conductive material, wherein the electrodes within each layer are arranged around a center of symmetry and a width of the electrodes decreases with increasing radius from the center; and at least one medium for modifying the wavefront in dependence on electrical excitation of the medium, the medium being arranged between the electrode layers, wherein, within at least one of the electrode layers comprises $2N+1$ strips numbered consecutively with an index j that runs as $-N, -N+1, \dots, 0, 1, \dots, N$, and **the strip with index j covers an area in the (x,y) plane that complies with**

$$\frac{2j-1}{2N+1} < W_{31}(x,y) < \frac{2j+1}{2N+1}$$

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where $W_{31}(x,y) = (x^2 + y^2)x$ is the Seidel polynomial for coma, and x,y are normalized coordinates in the cross-section of the radiation beam in the plane of the compensator, where x is in the direction of displacement of an objective lens system of a device in which the compensator is to be disposed.

Response to Arguments

8. Applicant's arguments, see page 8, filed March 31, 2004, with respect to rejections involving Wada have been fully considered but they are not persuasive. Applicant argues that the resistors of Wada are distinct from and not integrated in the electrodes of Wada because the electrodes are shown on the left of Fig. 3 while the resistors are shown on the right. It is noted that electrodes are distinct from resistors because of their function. However, distinction does not rule out integration. For example, the radiation source, modifier, and objective system of the claimed invention are all distinct elements and integrated in an optical head (Page 2, lines 27-28). The resistors (Fig. 3, elements r1-r4) are integrated in the electrodes (Fig. 3, elements A-E) of Wada because the resistors and the electrodes are joined, unified, or united as one whole unit (Fig. 3). Furthermore, in the claimed invention, even though the resistors (Fig. 9, elements 84-85) are shown below the electrodes (Fig. 9, elements 76-80), Applicant discloses that the resistors are integrated in the electrodes (Page 12, lines 1-2).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

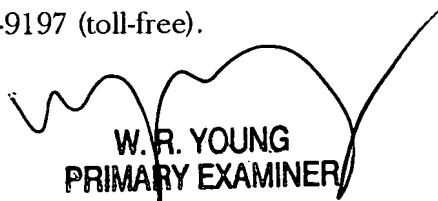
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia



W. R. YOUNG
PRIMARY EXAMINER